

## Remarks

Claims 41 and 43 have been amended to clarify the limitations previously recited.

All claims stand rejected as anticipated or obvious over Stevens. During the interview the examiner requested that the applicant's representative file a paper identifying how the current claim limitations distinguish over the use of a single RF signal as a synchronization signal which is transmitted along the length of the train as disclosed in Stevens.

Stevens discloses a system or method for determining the physical order of plural railcars by measuring a parameter **which varies along the length of the train.** (see Col. 4, lines 17-18.) One embodiment disclosed in Stevens is a system in which a single synchronization signal and a single serialization signal is transmitted along the length of the train and the difference in time between the receipt of the two signals at each car is used to determine the railcar's relative position. For example, Stevens discloses:

The high speed synchronization signal is transmitted along the train. Sometime shortly thereafter or simultaneously with the high speed synchronization signal, a separate serial signal is propagated along the train to create the varying parameter along the train. The car electronics or nodes 30 along the train measure the time between the reception of the synchronization signal and the serial signal transmitted along the train. This time difference is recorded and used to determine the order of the cars in the train. The car electronics 30 transmits the time difference with an identification of the trainline 10 to each of the other nodes and to the trainline controller 20. The time difference increases as the position of the car increases along the trainline controller 20. (Col. 4, lines 31-44).

Stevens also discloses that an RF signal can be used as the synchronization signal and a pressure pulse can be used as the serial signal. Thus, the time difference being

measured at each railcar is the difference in time between the receipt of the single serialization signal (RF) and the single serial signal (pressure pulse). Because the serialization signal and serial signal are propagating at different speeds, the time difference measured at each railcar **varies along the length of the train**, i.e., “increases as the position of the car increases along the trainline from the trainline controller.” (Col. 4, lines 43-45; emphasis supplied). Thus, the relative order of the trains can be determined by sorting the measured time differences in “increasing” order because the time difference increases as the railcar is located further from the head end unit (HEU), i.e., the source of the synchronization and the serial signal.

In contrast, applicant’s disclosure is directed to a system and method of determining the relative order of railcars by measuring a parameter which **does not** vary along the length of the train. In applicant’s system, an RF signal is sent from the head end unit along the length of the train. Upon receipt of the RF signal each railcar rests its timer. A pneumatic pulse is then transmitted along the length of the train. The first railcar to receive the pressure pulse transmits an RF message stating that it is the first car to receive the pressure pulse. Upon receipt of the RF signal transmitted by the first railcar, each other railcar resets its timer. Upon receipt of the pressure pulse at the next railcar, the railcar transmits an RF message stating it is the second car to receive the pressure pulse. The process of transmitting an RF signal upon receipt of the pressure pulse, and of resetting its timer upon receipt of the RF signal from another railcar continues until all railcars have determined their relative order. Thus, each railcar is able

to determine its relative position based on the receipt of an RF signal transmitted by another railcar and the receipt of the pressure pulse.

Because each railcar transmits a signal as soon as it detects the pressure pulse, the time difference between the receipt of the signal transmitted from another **railcar** and the pneumatic pulse is approximately the same at each railcar, i.e., the difference between the time it takes an RF signal and a pressure signal to travel one car length.

Each of the independent claims recites the limitations that (a) each railcar transmits a signal upon receipt of the pressure pulse and (b) the relative order of the train is determined based on the receipt of the pressure pulse and the receipt of the RF signal transmitted by another railcar. For example, independent Claims 22, 28 and 41 recite the limitations, *inter alia*, of transmitting a signal from each car upon receipt of the pressure pulse and determining the order of the railcars based on the difference in time between the receipt of a signal transmitted from the “immediately preceding railcar” and the receipt of the pressure pulse.

Independent Claims 29 and 32 recite the limitation of “transmitting an electrical signal from each railcar ..upon receipt of the pneumatic pulse” and determining the relative position of the railcar as a function of the time difference between the receipt of the pressure pulse “and the electrical signal transmitted by another railcar”.

Independent Claim 38 recites the limitation of “transmitting an electrical signal from each railcar upon receipt of the pressure pulse” and determining the relative position of the railcar as a function of the time difference between the receipt of the pressure pulse “and the receipt of the last received electrical signal.”

Independent Claims 43 recites the limitation, *inter alia*, that each railcar transmits a wireless signal upon receipt of the pressure pulse and determines its relative position using the time of receipt of a wireless signal received in closest proximity to the pneumatic signal.

Independent Claims 44, 52 and 57, each recite, *inter alia*, transmitting an electrical signal from each railcar upon receipt of the pressure pulse and determining the relative position of a railcar based upon the time of receipt of an electrical signal from another railcar.

In Stevens, the time between the receipt of a signal from another railcar and the pressure pulse is not measured. There is no disclosure of determining the order of the railcars other than from the time difference between the receipt of the single synchronization signal and the receipt of the single serial signal.

Reconsideration and allowance of Independent Claims 22, 28, 29, 32, 38, 41, 44, 52 and 57 is solicited.

The remaining claims ultimately depend from their respective independent base claim and are therefore allowable with their respective base claims without recourse to the further patentable limitations respectively recited therein.

Applicant respectfully requests reconsideration and allowance of all pending claims.

Respectfully submitted,



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